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Know-how put to good use

Students use engineering studies on projects

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Earphones are a necessity for many music lovers, but sometimes earphones can leave something to be desired in terms of comfort. That's the problem Greenfield-Central seniors Catherine Hamilton, Kelly McNabb and Claire Phillippi set out to solve in their final project for Project Lead the Way.

"(Comfortable earphones) are all very pricey. If you're going to find a quality earphone, they're going to cost you big bucks," Hamilton said Wednesday night, when a total of nine seniors presented their final projects to parents and engineers at the high school.

Hamilton's team dubbed themselves GreenGlobalization. They surveyed 139 people, and found that many agreed with their observations about earphones. The team then came up with 28 ideas for fixing the problem and consulted experts from speaker manufacturers Klipsch and Bose for some insights about audio technology.

Eventually, GreenGlobal-ization decided to use Memory Foam and silicone as materials for their prototype. Memory Foam is used in mattresses and known for its softness, while silicone isn't as hard as plastic.

Hamilton was the first to test the team's prototype.

"I enjoyed using them," she said. "Granted, the sound quality was sub-par."

But the earphones were comfortable and inexpensive to make. GreenGlobalization opted to use speakers from the Dollar Store instead of speakers from earphones they received from a contact at Klipsch.

"He was generous enough to lend them to us, so we were generous enough to (give) them back in one piece," Hamilton said of the Klipsch earphones.

GreenGlobalization surveyed people about what they'd pay for comfortable earphones. The response was 50 cents to $2 for cheaper earphones and $20 or more for a higher-quality product.

PLTW is a program that prepares students for careers in engineering and other applied math and science areas. Final projects for the G-C students were independent, with teams going through a 12-step design process.

"It takes so much discipline (to stay on task)," observed Hamilton.

Another G-C team called Innotech is seeking a patent for their work. Spencer House and Jordan Lewis set out to make Smart Boards – interactive screen systems commonly used for education – more accessible for individual students. They met with product and technology consultants and demonstrated Wednesday how their work would complement existing Smart Board technology.

Keith Thackery, a PLTW teacher, said Innotech's work is definitely patentable.

"Spencer has been able to apply a lot of the knowledge he's learned in business class (in giving a project presentation)," Thackery said, adding that he is proud of all G-C's PLTW seniors.

Electronic devices losing their power charge too quickly was the problem taken up by seniors Aaron Alley and Eric Smith. Their crank prototype powered a cell phone for 24 hours with about three minutes of cranking.

Seniors Eric Lutzke and Andrew Mercer researched how to keep computers and servers from overheating.

They demonstrated a thermoelectric generator, which converts heat to electricity.

“It’ll actually power my speakers,” Lutzke said.

As part of the project, Lutzke and Mercer contacted engineers at Intel and IBM for information about computer processors.

Among the parents who watched the senior projects was Mercer’s mother, Priscilla.

“It’s really hard to describe,” Priscilla Mercer said. “Andy is my eldest, and seeing him up there – I was so proud.”

Mercer was always been a builder and designer since he was young, and PLTW has really captured his interest, his mother said.

Many of the G-C seniors intend to study different engineering disciplines at universities like Purdue University, the University of Evansville and Calvin College.

Phillippi plans to study mechanical engineering and eventually become a missionary, while Hamilton plans to study architecture at Ball State.

McNabb plans to study mechanical engineering with an aerospace minor at the Rochester Institute of Technology. Her ambition: work for NASA.

Derek R. Smith / Daily Reporter Kelly McNabb (left), Claire Phillippi and Catherine Hamilton stand in front of a poster for their project to produce comfortable, inexpensive earphones.

Project Lead the Way

Project Lead the Way seniors:

Aaron Alley, Catherine Hamilton, Spencer House, Jordan Lewis, Eric Lutzke, Kelly McNabb, Andrew Mercer, Claire Phillippi, Eric Smith